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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|-------------------------|---------------------|------------------|
| 10/754,265 | 01/09/2004 | Dominic J. Mongillo JR. | EH-10979 (03-513) | 7771 |
| 34704 | 7590 | 03/23/2005 | EXAMINER | |
| BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510 | | | KERSHTEYN, IGOR | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3745 | |

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/754,265 | Applicant(s) MONGILLO ET AL. | |
| | Examiner Igor Kershteyn | Art Unit 3745 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>01/09/2004</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

In page 4, lines 6-7, the specification recites "a fan shaped coolant flow which mimics the gas path free stream (see FIGS. 1 and 3)" which is not an accurate statement because the gas path free stream near the platform would travel generally parallel with the surface of the platform that is exposed to the gas stream whereas the arrows indicating the direction of travel of cooling flow near the bottom platform shown on the bottom side of figure 1 are inclined relatively to the abovementioned surface of the bottom platform.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-11, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linask (5,288,207) in view of Anselmi et al. (5,503,529).

Linask, in figures 1-5, teaches a component 44 for use in a gas turbine engine 12 comprising: an airfoil portion (not numbered) having a trailing edge (not numbered); and

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a non-linear array of teardrop shaped assemblies 82 positioned adjacent said trailing edge and said teardrop shaped assemblies 82 form a plurality of injection slots 106 for injecting the coolant flow into a fluid passing over said airfoil portion, wherein said non-linear array comprises an arcuate array of teardrop shaped assemblies 82.

Linask doesn't teach the injection slots injecting a fan shaped coolant flow into a fluid passing over the airfoil portion.

Anselmi et al., in figure 1, teach an airfoil 12 having a plurality of injection slots 16 forming a fan shaped coolant flow into a fluid passing over the airfoil portion 12.

Since Linask and Anselmi et al. are analogous art because they are from the same field of endeavor, that is the gas turbine airfoil cooling art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the injection slots of Linask with the fan shaped arrangement as taught by Anselmi et al. for the purpose of matching the respective inclination of combustion gas streamlines flowable over the airfoil surface.

Claims 1-3, and 5-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krause et al. (5,931,638) in view of Anselmi et al. (5,503,529).

Krause et al., in figure 2, teaches a component 10 for use in a gas turbine engine comprising: an airfoil portion 12 having a trailing edge 26; and a non-linear array of teardrop shaped assemblies 85 positioned adjacent said trailing edge 26 and said teardrop shaped assemblies 85 form a plurality of injection slots 86 for injecting the

coolant flow into a fluid passing over said airfoil portion 12, wherein said non-linear array comprises an arcuate array of teardrop shaped assemblies 85.

Krause et al. don't teach the injection slots injecting a fan shaped coolant flow into a fluid passing over the airfoil portion.

Anselmi et al., in figure 1, teach an airfoil 12 having a plurality of injection slots 16 forming a fan shaped coolant flow into a fluid passing over the airfoil portion 12.

Since Krause et al. and Anselmi et al. are analogous art because they are from the same field of endeavor, that is the gas turbine airfoil cooling art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the injection slots of Krause et al. with the fan shaped arrangement as taught by Anselmi et al. for the purpose of matching the respective inclination of combustion gas streamlines flowable over the airfoil surface.

Claims 1-3, 5, 6, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liang (5,975,851) in view of Anselmi et al. (5,503,529).

Liang, in figures 1-3, teaches a component 10 for use in a gas turbine engine comprising: an airfoil portion 12 having a trailing edge 20; and a non-linear array of teardrop shaped assemblies 54 positioned adjacent said trailing edge 20 and said teardrop shaped assemblies 54 form a plurality of injection slots 45 for injecting the coolant flow into said fluid passing over said airfoil portion 12, wherein said non-linear array comprises an arcuate array of teardrop shaped assemblies 54.

Liang doesn't teach the injection slots injecting a fan shaped coolant flow into a fluid passing over the airfoil portion.

Anselmi et al., in figure 1, teach an airfoil 12 having a plurality of injection slots 16 forming a fan shaped coolant flow into a fluid passing over the airfoil portion 12.

Since Liang and Anselmi et al. are analogous art because they are from the same field of endeavor, that is the gas turbine airfoil cooling art, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the injection slots of Liang with the fan shaped arrangement as taught by Anselmi et al. for the purpose of matching the respective inclination of combustion gas streamlines flowable over the airfoil surface.

Prior Art

Prior art made of record but not relied upon is considered pertinent to Applicant's disclosure and consist of seven patents.

Moore et al. (4,180,373) is cited to show a gas turbine airfoil cooling arrangement having a plurality of tear-drop assemblies adjacent a trailing edge forming a fan shaped coolant flow but fails to teach a non-linear array of the tear-drop assemblies.

Green et al. (5,403,159) is cited to show a gas turbine airfoil cooling arrangement having a plurality tear-drop assemblies adjacent a trailing edge but fails to teach a non-linear array of the tear-drop assemblies forming a fan shaped coolant flow.

Hoff et al. (5,462,405) is cited to show a gas turbine airfoil cooling arrangement having a plurality tear-drop assemblies adjacent a trailing edge but fails to teach a non-linear array of the tear-drop assemblies forming a fan shaped coolant flow.

Morris et al. (5,772,397) is cited to show a gas turbine airfoil cooling arrangement having a plurality tear-drop assemblies adjacent a trailing edge but fails to teach a non-linear array of the tear-drop assemblies forming a fan shaped coolant flow.

Fukuda et al. (5,827,043) is cited to show a gas turbine airfoil cooling arrangement having a plurality of tear-drop assemblies adjacent a trailing edge, and a non-linear array of the tear-drop assemblies but fails to teach a fan shaped coolant flow.

Papple et al. (6,257,831) is cited to show a gas turbine airfoil cooling arrangement having a plurality inclined tear-drop assemblies adjacent a trailing edge, and a non-linear array of the tear-drop assemblies but fails to show the lower part of the trailing edge coolant arrangement.

Cunha et al. (6,607,355) is cited to show a gas turbine airfoil cooling arrangement having a plurality tear-drop assemblies (See column 5, lines 36-37) adjacent a trailing edge but fails to teach a non-linear array of the tear-drop assemblies forming a fan shaped coolant flow.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Kershteyn whose telephone number is

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(571)272-4817. The examiner can be reached on Monday-Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached on **(571)272-4820**. The fax number is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308 0861.

IK
March 14, 2005

A handwritten signature in black ink, appearing to read 'Igor Kershteyn', with a stylized, flowing script.

Igor Kershteyn
Patent examiner.
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